Chemical / Biological Protective Closures Systems Developed for Military Applications

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Diversified Marketing Group

FLEXSEAL ™

Acronyms

C/B or C/P

C/B –
Chemical
Biological

C/P –
Chemical
Protective

C/B or
Chem Bio

INTRODUCTION

- NECESSITY
- NEEDS
- CHALLENGE
- SOLUTION
- C/B C/P - INTERCHANGEABLE TERMINOLOGY

C/B APPLICATIONS

CB Shelter

Airtight Shelter

Army CB Shelter

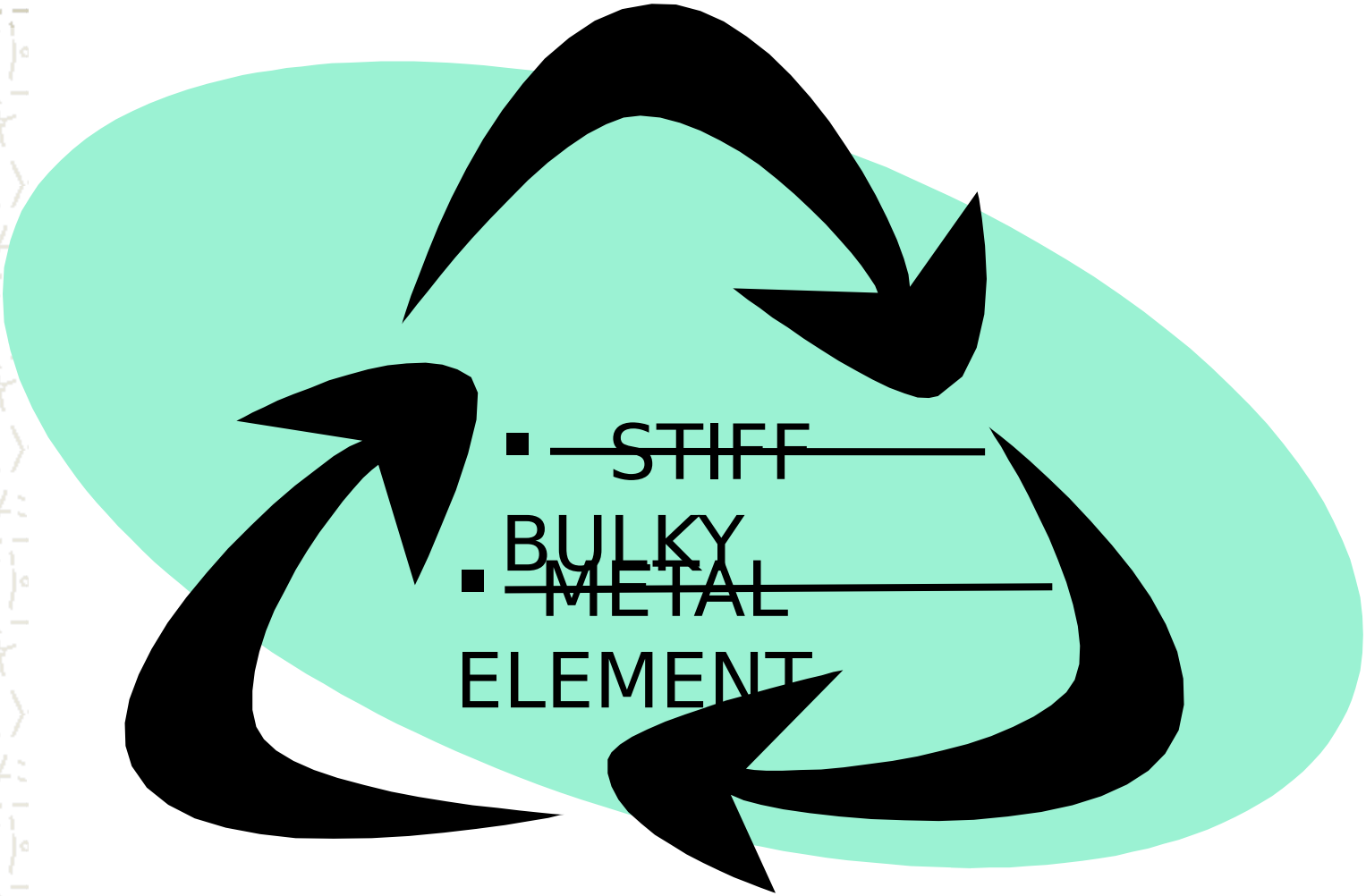
Under-water Suit

CB Protection Suit

First Responder Suit

Hovercraft Skirt

EVOLUTION



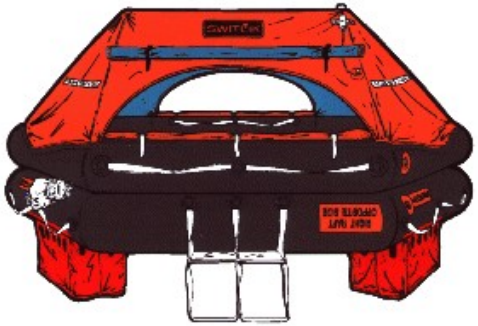
COMMERCIAL APPLICATIONS

Expedition Suit

Camera

Anti Exposure Flame Resistant Suit

Waterpro of Ruck Liner



Life raft

Anti-Exposure Suit

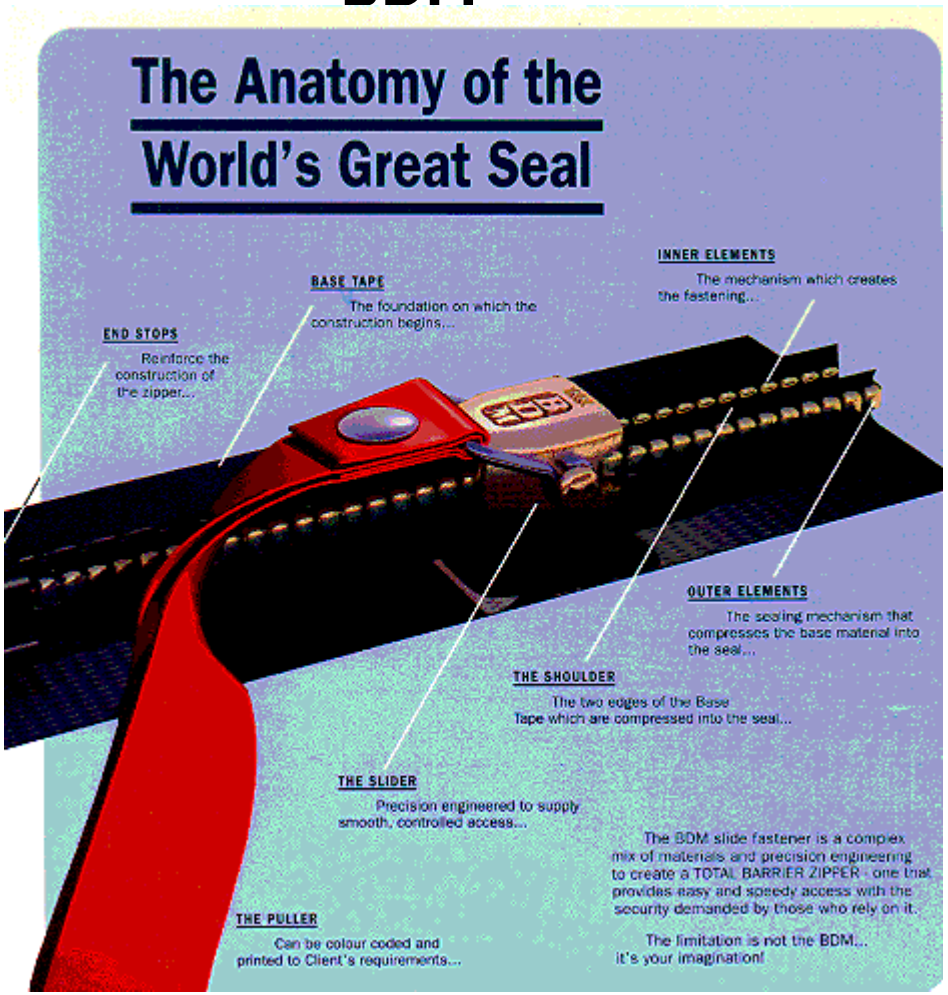
Ice Commander Suit

“NEW” C/B NEEDS

- REDUCTION IN WEIGHT & SIZE
- AIR, WATER & CB RESISTENT
- COST EFFECTIVE
- FLEXIBLE

THE CHALLENGE

BDM


The Anatomy of the World's Great Seal
INNER ELEMENTS
The mechanism which creates the fastening...
BASE TAPE
The foundation on which the construction begins...
END STOPS
Reinforce the construction of the zipper...
OUTER ELEMENTS
The sealing mechanism that compresses the base material into the seal...
THE SHOULDER
The two edges of the Base Tape which are compressed into the seal...
THE SLIDER
Precision engineered to supply smooth, controlled access...
The BDM slide fastener is a complex mix of materials and precision engineering to create a TOTAL BARRIER ZIPPER - one that provides easy and speedy access with the security demanded by those who rely on it.
THE PULLER
Can be colour coded and printed to Client's requirements...
The limitation is not the BDM... it's your imagination!

“WET SUIT” ZIPPER APPLICATIONS

Level A Hazmat

Immersion Suit

Immersion Suit System

“WET SUIT” ZIPPER APPLICATIONS

Air Force Anti - Exposure Suit

Navy Anti – Exposure Suit

SOLAS SUIT

SOLAS Suit

SOLAS Ocean Commander Suit

SOLAS Suit

SOLAS CERTIFICATION

EC Type Examination Certificate

GL Luxembourg

of a Notified Body within the meaning of Article 9 of the Marine Equipment Directive 96/98/EC of 20 December 1996.

This is to certify that the equipment identified below has been tested in accordance with the relevant type approval procedures of the Marine Equipment Directive and was found in compliance with the requirements of the international standards contained therein.

Certificate No.	**20 765 - 04 Lux**
Company	**Aquata-Euras GmbH** **Neuendorfstraße 23 d** **D-16761 Hennigsdorf, Berlin**
Product Description	**Immersion suit, insulated, 5mm neoprene, with fixed gloves**
Product Type	**Immersion suit ARO V20**
Item No.	**A.1/1.5**
Conformity Assessment Procedure	**B**
Related Directive Additional Standards	**2002/75/EC**
Specified Standards	**- SOLAS 74 as amended, Reg. III/4, III/7.3, III/22.4, III/32.3, III/34 and X/3** **- LSA Code** **- 2000 HSC Code 8.1, 8.3** **- IMO Resolution MSC.81(70)**
Documents	**- Evaluation and test report GL Bangkok, 2004-06-25** **- Test report zipper Dynat SEY85 RV, 2004-05-10** **- Type examination certificate MED-B-1906, DNV, 2003-03-25** **-Drawing: 2001-006, 2001-007**
Remarks	**Manufacturer: EURO ASIA Manufacturing Company Ltd. / Thailand.** **The immersion suit is designed to be worn without lifejacket.**
Valid until	**2009-07-11**

GL Luxembourg
EC Identification No.: 0801

Page 1 of 2

Luxembourg, 2004-07-12

H. Weber

This certificate is valid for equipment, that is conform to the approved type.The manufacturer must inform the Notified Body named on this certificate of any modification or changes to the approved product in order to obtain a valid certificate.

SOLUTION

- SARAN, DEMP, 24 MUSTARD GAS TESTED
- COMBINED INTERNATIONAL TECHNOLOGY
- VERSATILE CLOSURE

FLEXSEAL – Test Results

Performance

* Crosswise Strength	: av. 209 lbs.	<min. 176 lbs.>
* Puncture Strength	: av. 51 lbs.	<min. 44 lbs.>
* Top Stop Holding Strength	: av. 121 lbs.	<min. 88 lbs.>
* Bottom Stop Holding Strength	: av. 61 lbs.	<min. 55 lbs.>
* Operation Resistance	: av. 4.1 lbs.	<max. 5.5 lbs.>

*Pressure Test **

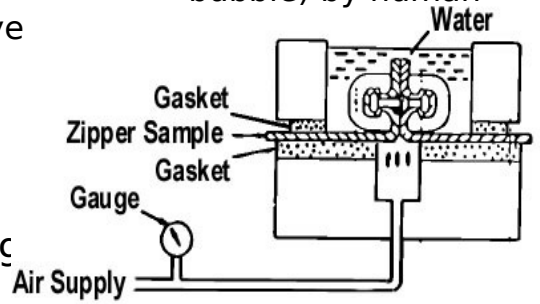
* From coated side : 5.6 psi (0.4 bar) <minimum>
  (after 500 endurance cycles : 2.8 psi (0.2 bar) <minimum>)
  Zipper remains airtight even when folded or bent.
• From coil side : No air tightness

Others

* Color : Black
* Temperature range : -13 to +203 Fahrenheit (-25 to +9
* Connection possibilities:Gluing, Stitching

Air Tightness Test

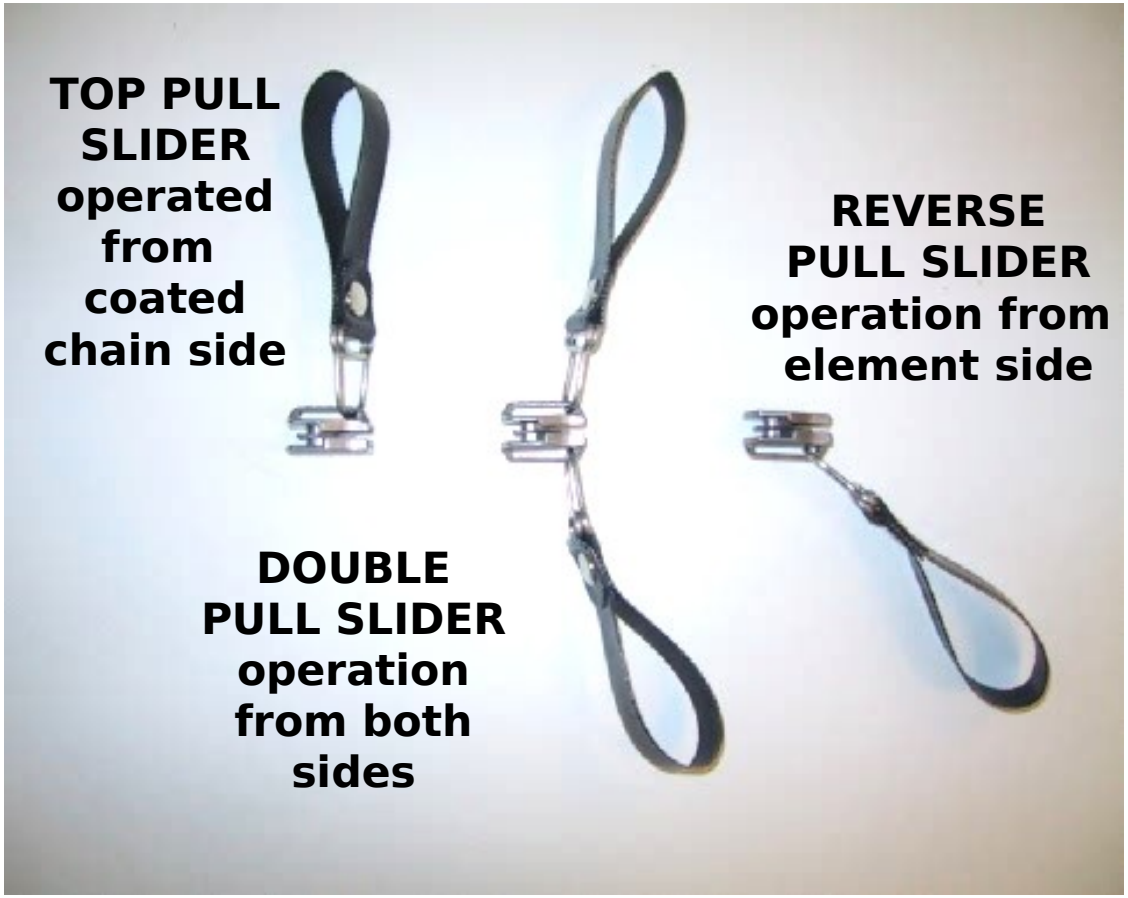
Pressure Time : 15 sec.
Apparatus : See Below
Water Level : One side submersed
Evaluation : No leakage (no bubble) by human eye



FLEXSEAL - Characteristics

- SOFT HAND
- SUPPLE FEEL
- AIRTIGHT
- HIGH CROSSWISE STRENGTH
- MUTIPLE ZIPER CONFIGURATIONS
- CHLOROPRENE RUBBER SEAL

FLEXSEAL – Slider Configurations


TOP PULL SLIDER operated from coated chain side
REVERSE PULL SLIDER operation from element side
DOUBLE PULL SLIDER operation from both sides

FLEXSEAL – Configuration 1

SINGLE SLIDER OPEN TOP
CLOSED BOTTOM

FLEXSEAL – Configuration 2

SINGLE SLIDER, SEPARATING

FLEXSEAL – Configuration 3

DOUBLE SLIDER

FLEXSEAL – Configuration 4

DOUBLE PULL SLIDER

FLEXSEAL – Configuration 5

CLOSED TOP AND BOTTOM

FLEXSEAL – Configuration 6

TOP PULL SLIDER - ELEMENT SIDE FACING OUTWARDS

FLEXSEAL – Configuration 7

OPEN TOP WITH SEAL BLOCK

FLEXSEAL – Available Options I

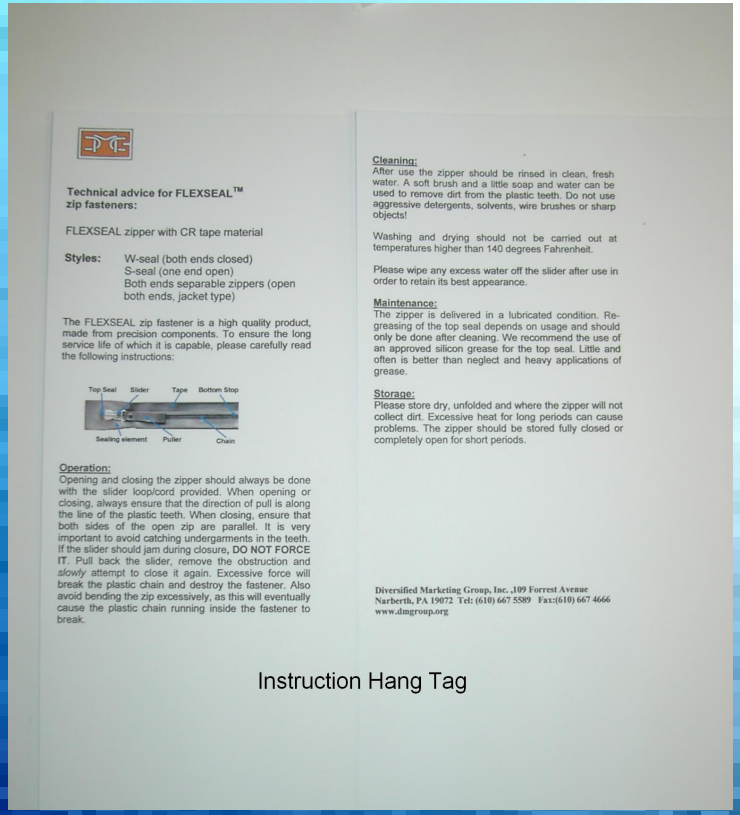
MAINTENANCE KIT

- **Tube of Lubricant**
- **Kit provided in a clear plastic Bag**

FLEXSEAL – Available Options II

INSTRUCTIONAL HANGTAG

- **Zipper Operation**
- **Cleaning**
- **Maintence – suggested**
- **Proper Storage**



Technical advice for FLEXSEAL™ zip fasteners:

FLEXSEAL zipper with CR tape material

Styles: W-seal (both ends closed)
S-seal (one end open)
Both ends separable zippers (open both ends, jacket type)

The FLEXSEAL zip fastener is a high quality product, made from precision components. To ensure the long service life of which it is capable, please carefully read the following instructions:

Top Seal Slider Tape Bottom Stop
Sealing element Puller Chain

Operation:
Opening and closing the zipper should always be done with the slider loop/cord provided. When opening or closing, always ensure that the direction of pull is along the line of the plastic teeth. When closing, ensure that both sides of the open zip are parallel. It is very important to avoid catching undergarments in the teeth. If the slider should jam during closure, **DO NOT FORCE IT**. Pull back the slider, remove the obstruction and *slowly* attempt to close it again. Excessive force will break the plastic chain and destroy the fastener. Also avoid bending the zip excessively, as this will eventually cause the plastic chain running inside the fastener to break.

Cleaning:
After use the zipper should be rinsed in clean, fresh water. A soft brush and a little soap and water can be used to remove dirt from the plastic teeth. Do not use aggressive detergents, solvents, wire brushes or sharp objects!

Washing and drying should not be carried out at temperatures higher than 140 degrees Fahrenheit.

Please wipe any excess water off the slider after use in order to retain its best appearance.

Maintenance:
The zipper is delivered in a lubricated condition. Re-greasing of the top seal depends on usage and should only be done after cleaning. We recommend the use of an approved silicon grease for the top seal. Little and often is better than neglect and heavy applications of grease.

Storage:
Please store dry, unfolded and where the zipper will not collect dirt. Excessive heat for long periods can cause problems. The zipper should be stored fully closed or completely open for short periods.

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Narberth, PA 19072 Tel: (610) 667 5589 Fax:(610) 667 4666
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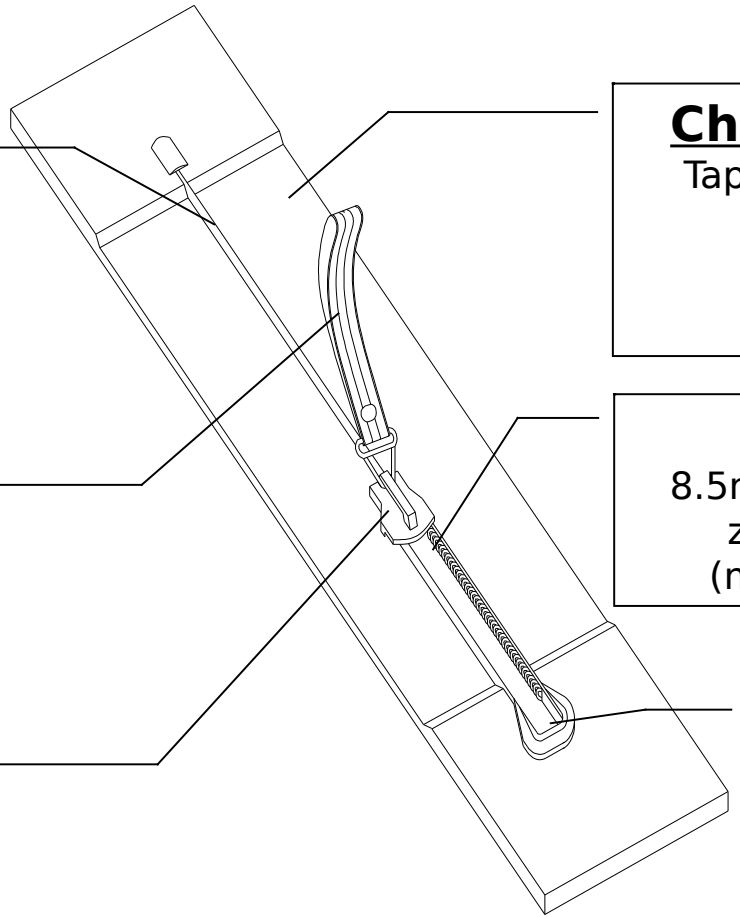
Instruction Hang Tag

FLEXSEAL – Overview



Airtight
Maintains air tightness on coated side even when zipper if bent

Slider Pull
Rubber tape with attachment ring

Slider
Stainless Steel

Chloroprene Coating
Tape side covered by rubber extrusion

(material - chloroprene rubber)

Base Chain
8.5mm. element width woven zipper with no tape gap
(material - 100% polyester)

Top Stop & Air Tightness
Double seal maintains air tight characteristic

FLEXSEAL – The Future

“Ultra”
Lightweight

Soft,Pliable

Next Generation,
Lightweight
Garments

FLEXSEAL – Contact Info

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